Amendments to the Claims:

Listing of Claims

1. (Previously presented): A method of detecting a target analyte in a sample comprising:

a) adding said sample to a detection chamber comprising a detection electrode comprising a self assembled monolayer and a capture ligand bound to said self assembled monolayer using biotin and streptavidin;

b) mixing said sample such that said target analyte binds to said capture ligand to form an assay complex, wherein said assay complex further comprises at least one electron transfer moiety (ETM); and

c) detecting the presence of said ETM using said detection electrode.

2. (Previously presented): A method according to claim 1 or 26 wherein said capture ligand comprises a nucleic acid.

3. (Canceled)

4. (Previously presented): A method according to claim 1 or 26 wherein said mixing is accomplished by applying an AC/DC pulse.

5. (Previously presented): A method according to claim 1 or 26 wherein said mixing is accomplished through the use of mixing particles.

6. (Original): A method according to claim 5 wherein said mixing particles comprise microparticulate matter.

7. (Previously presented): A method according to claim 1 or 26 wherein said mixing is accomplished through the use of an electrophoretic electrode.

8. (Original): A method according to claim 1 wherein each of said detection electrodes is "sunken" or "recessed" with respect to the chamber, such that the flow of said sample past each of said detection electrodes causes said mixing.

9. (Previously presented): The method of claim 1 or 26 wherein said monolayer insulates against one or more of nonspecific binding and nonspecific signaling.

10. (Previously presented): The method of claim 1 or 26 wherein said detection electrode is present among an array of detection electrodes.

11. (Previously presented): The method of claim 26 wherein said capture ligand is bound to said self-assembled monolayer using biotin and streptavidin.

12. (Canceled):

13. (Previously presented): The method of claim 2 wherein said target analyte is a nucleic acid and said method further comprises amplifying said nucleic acid analyte with PCR prior to binding to said capture ligand.

14. (Previously presented): The method of claim 11 wherein said target analyte is a nucleic acid and said method further comprises amplifying said nucleic acid analyte with PCR prior to binding to said capture ligand.

15. (Previously presented): The method of claim 1 wherein said ETM is a hybridization indicator.

16. (Previously presented): The method of claim 15 wherein said ETM comprises a transition metal complex.

17. (Previously presented): The method of claim 15 wherein said detecting comprises amperommetry.

18. (Previously presented): The method of claim 15 wherein said detecting comprises voltammetry.

19. (Previously presented): The method of claim 15 wherein said detecting comprises capacitance measurement.

20. (Previously presented): The method of claim 15 wherein said detecting comprises impedence measurement.

21. (Previously presented): The method of claim 1 or 8 wherein said detecting comprises amperommetry.

22. (Previously presented): The method of claim 1 or 8 wherein said detecting comprises capacitance measurement.

23. (Previously presented): The method of claim 1 or 8 wherein said detecting comprises impedence measurement

24. (Previously presented): The method of claim 1 or 8 wherein said detecting comprises voltammetry.

25. (Previously presented): The method of claim 1 or 8 wherein said detecting comprises amperommetry.

26. (Previously presented) A method of detecting a target analyte in a sample comprising:

a) adding said sample to a detection chamber comprising a detection electrode comprising a self assembled monolayer and a capture ligand bound directly or indirectly to said self assembled monolayer;

b) mixing said sample such that said target analyte binds to said capture ligand to form an assay complex, wherein said assay complex further comprises at least one electron transfer moiety (ETM); and

c) detecting the presence of said ETM using said detection electrode, wherein said detection electrode is sunken or recessed with respect to said chamber such that the flow of said sample past said detection electrode causes said mixing.

27. (New) The method of claim 1 or 26, wherein said ETM is a ferrocene.

28. (New) The method of claim 1 or 26, wherein said ETM is a redox protein.